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COURSE: EPIDEMIOLOGY AND COMMUNICABLE DISEASE

1. Discuss communicable diseases under the following headings:

a. Definition

b. Causative agents

c. Modes of transmission

d. Methods of prevention and control

A. Communicable Diseases

Definition:

Communicable diseases are illnesses caused by infectious agents (such as bacteria, viruses, fungi, or parasites) that can be transmitted directly or indirectly from one person, animal, or object to another.

B. Causative Agents:

1. Bacteria – e.g., Mycobacterium tuberculosis (tuberculosis).

2. Viruses – e.g., HIV, Influenza virus, Hepatitis B virus.

3. Fungi – e.g., Candida albicans (candidiasis).

4. Parasites – e.g., Plasmodium falciparum (malaria).

5. Rickettsiae and prions – e.g., Rickettsia prowazekii (typhus), prions (Creutzfeldt-Jakob disease).

C. Modes of Transmission:

1. Direct transmission: Person-to-person contact, sexual intercourse, droplet infection (e.g., COVID-19, influenza).

2. Indirect transmission: Through contaminated objects, food, or water.

3. Vector-borne transmission: Via insects such as mosquitoes (e.g., malaria).

4. Airborne transmission: Through air particles or aerosols.

5. Vertical transmission: From mother to child during pregnancy or delivery.

D. Methods of Prevention and Control:

- Immunization and vaccination.

- Proper sanitation and hygiene.

- Isolation and quarantine of infected persons.

- Safe food and water handling.

- Health education and public awareness.

- Vector control (e.g., use of insecticide-treated nets).

- Early diagnosis and treatment

2. Explain the terms endemic, epidemic, and pandemic, giving examples.

Endemic:

A disease that is constantly present within a specific geographic area or population.

Example: Malaria in many parts of Africa.

Epidemic:

a widespread occurrence of an infectious disease in a community at a particular time.

Example: Cholera outbreak in a community.

Pandemic:

An epidemic that spreads across countries or continents, affecting a large number of people globally.

Example: COVID-19 pandemic.

3. Define and distinguish between incidence and prevalence. Explain their importance in epidemiology with examples.

Incidence:

The number of new cases of a disease occurring in a specific population during a defined period of time.

Example: If 50 new malaria cases occur in a village of 1,000 people in one month, the incidence rate is 5%.

Prevalence:

The total number of existing cases (both new and old) of a disease in a population at a given time.

Example: If 200 people currently have malaria in that village, the prevalence rate is 20%.

Importance in Epidemiology

a.Incidence helps measure the risk of developing a disease and is useful for identifying causes.

b.Prevalence shows how widespread a disease is and helps in planning health services and resources.

4. Describe the measures used in controlling communicable diseases at the community level.

a. Health Education:Promoting hygiene, sanitation, and preventive practices.

b. Immunization Programs: Routine and mass vaccination campaigns.

c. Environmental Sanitation: Proper waste disposal, clean water supply, and vector control.

d. Surveillance and Reporting: Early detection and notification of cases.

e. Isolation and Quarantine: Preventing spread from infected individuals.

f. Provision of Healthcare Services: Early diagnosis and treatment.

g. Legislation: Enforcement of public health laws (e.g., food safety, vaccination requirements).

h. Community Participation: Encouraging community involvement in disease prevention programs

5. Write short notes on the following:

a. Epidemiological triangle

b. Vehicle-borne transmission

c. Point prevalence and period prevalence

a. Epidemiological Triangle:

A model used to explain the cause of disease, consisting of three components:

Agent: The microorganism or pathogen causing disease.

Host: The organism (usually human) that harbors the disease.

Environment: External factors that affect the agent and host (e.g., climate, sanitation).

The interaction among these determines disease occurrence and spread.

b. Vehicle-Borne Transmission:

Occurs when infectious agents are transmitted through contaminated materials such as food, water, blood, or fomites (objects).

Example: Cholera spread through contaminated water.

c. Point Prevalence and Period Prevalence:

Point Prevalence: The proportion of individuals with a disease at a specific point in time.

Example: The number of people with malaria on January 1, 2025.

Period Prevalence: The proportion of individuals who have had a disease at any time during a specified period.

Example: Number of people with malaria between January and March 2025.

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